

statistics concerning the training of chemists employed in English chemical industries, of which Prof. G. G. Henderson is secretary, was read; information concerning their course of training had been received from 502 managers and chemists employed in English chemical industries, 111 of whom are fellows or associates of the Institute of Chemistry. The following figures give more detailed information:—

Number of graduates of a British University	59
Number of graduates of both a British and a foreign University	16
Number of graduates of a foreign University	32 ¹
	107
Number of non-graduates trained in a British University or University College	137 ²
Number of non-graduates trained in a British Technical College	165
Number of non-graduates trained in a foreign University or Technical College	8
Number of non-graduates trained in Evening Classes, analysts' laboratories, works' laboratories, or otherwise	85
	395

The committee on isomorphous sulphonic derivatives of benzene, of which Prof. H. E. Armstrong, F.R.S., is secretary, reported that Dr. Jee has completed the crystallographic study of the 1:3-dichloro-, chlorobromo- and dibromo-benzene 5-sulphonic chlorides and bromides, and finds that this group of compounds constitutes an isotetramorphous group. In discussing the colour of iodine-containing compounds, Miss Ida Smedley called attention to the fact that two classes of such compounds are known, namely, colourless and coloured. In a paper on colloids of zirconium compared with those of other metals of the fourth group, Dr. J. H. Gladstone, F.R.S., and Mr. W. Hibbert stated that zirconium gives a colloid of well-marked properties resembling those of silicon, tin, titanium and thorium; Dr. J. H. Gladstone also gave a paper on fluorescent and phosphorescent diamonds. The following papers were also read:—Note on a fourth methylmorphimethine, by Mr. J. Hawthorne; on the absorption of ammonia from water by algae, by Prof. E. A. Letts and Mr. J. S. Totton; on determinations of atmospheric carbonic anhydride made on board the *Discovery* on the voyage to the Cape and thence to New Zealand, by Prof. E. A. Letts; a new method of causing isomerisation, by Prof. R. Meldola; acid esters of methylsuccinic acids, by Prof. J. J. Sudborough and Mr. W. A. Bone; compounds of trinitrobenzenes and alkylated naphthylamines, by Mr. H. Hibbert and Prof. J. J. Sudborough; action of alkalis on cinnamic acid dibromide and its esters, by Prof. J. J. Sudborough and Mr. K. J. Thomson. An interesting feature of the proceedings of Section B was the reading and discussion of two important monographs, one on our present knowledge of diazo-compounds, by Dr. G. T. Morgan, and the other on hydro-aromatic compounds with single nucleus, by Dr. A. W. Crossley.

ANTHROPOLOGY AT THE BRITISH ASSOCIATION.

THE papers read before the Section covered, as will be seen, a considerable portion of the field that is usually embraced by anthropology.

Archæology.—Mr. W. J. Knowles exhibited some Irish flints mostly with a dark brown patina and "the fashion of chipping the flint perpendicularly through the thickness," some of which came from "interglacial gravels." Two questions were asked: (1) What useful object could the perpendicular chipping serve to man? (2) If not artificial, what force in nature can dress so many objects alike with chipping that has all the appearance of being artificial in character? Miss Nina F. Layard described and exhibited a number of variously shaped Palæolithic implements from a small pit in the plateau gravels of Ipswich, and Messrs. W. and W. A. Cunningham

gave an account of the recent discovery of Palæolithic implements from Knowle, Wiltshire; these implements and the ordinary flints of the gravel pit are remarkable for the very high polish that many exhibit, and some are marked with peculiar striæ. There are two views to account for the polishing, (1) a redeposit of silica, which was favoured by the authors, and (2) sand action, which was emphatically advocated by Prof. Boyd Dawkins; as a matter of fact, the sand of this quarry is exceptionally fine and entirely siliceous. Mr. S. B. Dixon also exhibited some of these polished implements. No satisfactory explanation was given of the striæ. Mr. W. J. Knowles described some important stone-axe factories that he had discovered near Cushendall, co. Antrim; axes in all stages of manufacture and innumerable chips were found where boulders of a certain rock occurred in the drift. The conditions were somewhat similar to those Mr. W. H. Holmes has described in the United States. Mr. Knowles also exhibited leaf-shaped stone blades from co. Antrim, which were probably a stage in the manufacture of spear- and arrow-heads, like the stone blades from America.

A remarkable series of underground, tunnel-like dwellings (souterrains) in Ulster was shown in lantern slides by Mr. W. J. Fennell, and similar remains from various parts of the British Isles were copiously illustrated by Mr. D. MacRitchie. Mr. G. Clinch also described the subterranean dwellings recently discovered at Waddon, near Croydon.

The report on the excavations at Arbor Low Stone Circle in Derbyshire was read by Mr. H. Balfour. The evidence as to its age was not decisive, but it pointed to the monument having been erected at the close of the Neolithic period, or at the beginning of the Bronze age. A Belfast antiquary endeavoured to prove that the Irish elk survived into the Bronze age, but the bones exhibited belonged to oxen, not to deer.

A note from Mr. R. A. S. Macalister on a prehistoric cemetery-cave in Palestine recorded the first discovery yet made of the pre-Israelite inhabitants of Palestine who burnt their dead; above these were found unburnt remains of the earliest Semitic stock. The recent Cretan excavations at Knossos by Mr. A. Evans and those at Palæokastro by Mr. R. C. Bosanquet were illustrated by lantern slides; at the latter site there is an exceptional opportunity for a craniological study of Mycænean and recent Cretans.

The Hon. John Abercromby read a very important paper on the oldest Bronze age earthenware vessel, which is usually called a "drinking cup" and for which he proposed the term of "beaker." By the aid of numerous photographs, he demonstrated that it came into Britain from the Rhine and in all probability had its origin in Central Europe. Bronze objects of the Hallstatt culture phase have been recognised in Ireland, but it was not until Mr. G. Coffey drew the attention of the Section to the fact that the abundance of them was realised. This he did in a very convincing manner, drawing his examples mainly from the wonderful collection of the Royal Irish Academy in Dublin. Iron was probably known before the close of the Hallstatt period in Ireland. Mr. Coffey also exhibited lantern slides of some remarkably fine carved Irish monuments belonging to the La Tène, or so-called Late Celtic, period. These stone monuments, which are ornamented with the "trumpet" design, are unique. Reports were read on excavations in the Roman fort at Gellygaer, near Cardiff, and in the Roman city of Silchester. The survival of certain Pagan sepulchral symbols on early Christian monuments in Ireland was abundantly illustrated by lantern slides by Mr. P. J. O'Reilly. The significance of these symbols is, however, unknown. A note was presented by Mr. F. P. Mennell on the Khani ruins twelve miles from Bulawayo, Rhodesia. It is satisfactory to find that these monuments are being investigated and the specimens preserved in the Rhodesia Museum.

Anthropography, or Physical Anthropology.—A new departure was made at this meeting in the formation of a subsection to discuss matters relating to this branch, and a demonstration was made by Prof. Symington in the anatomical museum of the College. Mr. J. F. Tocher read his report on the pigmentation survey of Scottish school children. Preparations are now being made for an exhaustive inquiry into the distribution of the hair and eye colour of Scottish children analogous to that made by Virchow for German children. Mr. Tocher also presented a note on some measurements of Eskimo. Mr. J. Gray gave measurements of the Indian Coronation contingent, and drew therefrom some interesting conclusions. Dr. C. S.

¹ Thirteen of whom studied also in a British University or Technical College.

² Twenty of whom studied also in a foreign University or Technical College.

Myers presented his report on the very numerous anthropometric investigations he has made among the native troops of the Egyptian army, and at the same time described a method of radial craniometry. The skeleton of Cornelius Magrath, the Irish giant, was exhibited, and the subject of giantism was lucidly explained, by Prof. J. D. Cunningham; Prof. A. F. Dixon also exhibited a skull modified by acromegaly. Prof. J. Symington exhibited some ancient Irish crania collected by the late John Grattan, of Belfast, and described the methods of cranial investigation adopted by that gentleman; the president also alluded in eulogistic terms to the acumen of Mr. Grattan, who, though he was engaged in business and had not received a scientific training, yet was in his time in advance of every European craniologist so far as methods were concerned.

Psychology.—Miss A. Amy Bulley read a paper on the psychology of primitive man; while primitive man had no absolute mental deficiency, he “sensed” objects singly and without anything more than a hazy perception of their relation to one another. The results of this deficiency were:—(1) Inability to generalise; (2) no distinction recognised between essential and non-essential characteristics; (3) imperfect understanding of cause and effect. These imperfections were employed as tests for certain religious ideas that have been attributed to primitive man, such as one supreme God, phallic worship, the ghost theory and the theory of the *continuum* in religion. Dr. W. Graham’s paper on the mental and moral characteristics of the people of Ulster led to a very lively debate which was fortunately free from excess, although the author referred to the increase of insanity due to religious excitement in the north of Ireland. The main valid criticism was the pointing out that the author fell into the common mistake of calling the non-Teutonic element in Ireland “Celtic,” thereby entirely ignoring the vastly preponderating Mediterranean strain.

Ethnography.—There were several papers, illustrated with lantern slides, which described certain peoples who had been studied by the lecturers. Dr. W. H. Furness gave an entertaining and instructive discourse on the Nagas, whom he visited with the special purpose of investigating whether they had a connection with any of the interior tribes of Borneo; he came to the conclusion that there was no positive proof for this view. The Lolos and other tribes of western China were dealt with by Mr. A. Henry. A comparison of the Lolo and Miao-tse speech with the Chinese suggests that the tonal monosyllabic languages form a distinct primitive group and are not the result of linguistic degradation; the peculiar script of the Lolos may be due to early Nestorian missionaries; the surnames of the Lolos always signify the name of a tree or animal, which may not be touched. Messrs. Nelson Annandale and H. C. Robinson described the wild and civilised tribes of Malay Peninsula. No distinction could be drawn between the Malays and Siamese of the district between Singora and Jambu; there is evidence of an admixture of aboriginal blood; the savage tribes are the Semangs, Sakais and Orang Laut Kappir of Trang. The report on the ethnological survey of Canada was presented. The Canadian Committee itself has not yet got beyond the “resolution” stage; the long report of more than ninety pages is solely the work of the secretary, Mr. C. Hill-Tout, who has investigated, mainly linguistically, the Lower Fraser Indians of British Columbia. The Royal Society of Canada has at last undertaken to prosecute with vigour the important and pressing objects of this committee.

Comparative Religion.—The human souls and ghosts of the Malays of Patani were described by Mr. N. Annandale, as well as the ghosts of inspired magicians, the giving in marriage of the son of such a ghost, and the marriage procession (a cyclone); the evolution was traced of a local god from such a ghost. Two papers by the Rev. J. H. Holmes were read by the president. The first described the sacred initiation ceremonies undergone by the lads of the Papuan Gulf. The boy is isolated in the “eravo,” or club house, until his hair has grown to its full length. His body must not be exposed to the sun, and he is subject to several taboos. The bull-roarer is shown and explained, and masks play a great part in the more important ceremonies. The second paper dealt with the religious ideas of the Elema tribe of the Papuan Gulf. From certain customs and taboos, it is evident the natives were totemic people, but they appear to have partially passed beyond this phase. There are four classes of ghosts—those who have died a natural death, who have been killed in a fight, who have been murdered, and who have been killed by a crocodile. Every family of living things, from man downwards, has its special god or guardian

spirit, for whom there is a feeling of respect; for example, the banana has two gods. The Toaripi or Elema recognise a good and an evil supreme god and a number of subsidiary ones. Mr. F. T. Elworthy exhibited a number of perforated stone amulets from Lincolnshire, Dorset, Somerset, co. Antrim, and southern Italy which are used as prophylactic agents against witchcraft in houses, cattle byres, or in gardens. An important paper on the Lia Fail of Tara and election of kings by augury was communicated by Mr. E. S. Hartland. The famous Lia Fail, or Stone of Destiny, often, but erroneously, identified with the Coronation Stone, was a stone on which were enchantments, for it used to roar under the person who had the best right to obtain the sovereignty of Ireland at the time the men of Ireland were in assembly at Tara to choose a king over them. It was thus an oracle, and the choice of king was made by the augury which it gave. Kingship was something more than human; it was thus necessary to ascertain the will of the gods. Other examples from diverse times and places were given as proofs of the widespread character of these customs.

Survivals.—Mr. E. Lovett discoursed in an interesting manner on tallies; these are records kept by cutting notches in sticks of wood, and are a survival of probably the earliest appliance of a commercial nature made by man. There are two varieties: (1) the contract tally, formed by a stick split through the notches, and (2) the simple or memorandum tally, a single notched slip of wood. The simple or folk tally has survived the complex form as elaborated in the banker’s and exchequer tallies. Numerous modern examples were exhibited. Mr. Hartland exhibited two wooden “swords” formerly worn as professional emblems by medical practitioners in Japan; one represented a bean pod, and the other was a rough piece of wood.

Museums.—On the last morning, a very interesting discussion on the classification and arrangement of exhibits in anthropological museums was started by the reading, by the recorder, of a very suggestive paper by Dr. W. H. Holmes, of the U.S. National Museum. The chief methods of arrangement are the ethnographical on a geographical basis, and the evolutionary and distributionary. It was generally agreed that no hard and fast rule could be laid down, but that it was desirable that every museum should develop along its own lines, subject to a controlling idea along one of these chief directions. It was held essential that museums should be liberally labelled, and rendered at the same time instructive and interesting; more attention should be paid to these points, as the success of a museum depends upon the interest that it awakens.

Classification.—The business of the Section terminated with a discussion of the classification of the subject-matter of anthropology; this was opened by Mr. E. N. Fallaize with a suggested scheme which was offered for future consideration.

A popular feature of the Section was the interesting museum mainly of local archaeology and ethnographic survivals which, thanks to the courtesy of Prof. Symington, were exhibited in the dissecting room and anatomical museum. Mr. R. Welch exhibited numerous photographs and other objects, notably a series of remarkable primitive vehicles from co. Antrim, which illustrated several stages in the evolution of the Irish jaunting car. Many of the papers read at the meeting will be published in full by the Anthropological Institute either in their *Journal* or in *Man*.

PHYSIOLOGY AT THE BRITISH ASSOCIATION.

PROF. HALLIBURTON, president of the Section, read a paper on the regeneration of nerves, contributed by Dr. Mott and himself. Two opinions existed in regard to the regeneration of nerve-fibres. One set of observers concluded that the new nerve-fibres sprout out from the central stump of the divided nerve-trunk. This was the opinion of by far the larger number of workers. The other opinion was that the new nerve-fibres were of peripheral origin. Those who held the latter view relied almost entirely upon histological evidence. But a strand of cells that looked like a nerve-fibre to the microscope might nevertheless be not physiologically a nerve-fibre, inasmuch as it might be quite unable to be excited as a true nerve-fibre is or to conduct nerve impulses as a nerve-fibre can. These functional performances were the true criteria for nerve-fibres. Among recent